

## REMARKS/ARGUMENTS

### A. In the Specification

1. No paragraphs have been amended in the specification to clarify previously disclosed matter and/or correct language, reference labeling, figure description, and/or syntax. No new matter has been added.

### B. Election/Restrictions

Applicant acknowledges the fact that Examiner acknowledges Applicant's election without traverse of Group 1, Claims 1-18 and 26 in the present application.

### C. Information Disclosure Statement

Applicant acknowledges that the information disclosure statement filed by Applicant has been placed in the application file and the information referred to therein has been considered by the Examiner as to the merits.

### D. Drawings

Applicant acknowledges that the drawings received by the Examiner are acceptable for examination purposes.

### E. In the Claims

Claims 1-18 and 26 have been amended to correct language, syntax, avoid the citation of the prior art, and/or point out the specific features of Applicant's invention with greater clarity. No claims have been cancelled. Claims have been added pursuant to the Examiner's notation regarding particle specificity.

*Regarding the Claim Rejections under 35 U.S.C. 112*

Applicant acknowledges the quotation of the appropriate paragraph of 35 U.S.C. 112 that forms the basis for the rejections under this section made in the office action.

1. Claims 1 -18 and 26 have been rejected under the first paragraph of 35 U.S.C. 112 because the specification, while being enabling for the coating of active material particles such as lithium manganese oxide and lithium cobalt oxide, does not reasonably provide enablement for all particles. However it should be noted in the specification that the inventors noted that the unique construction of the particles adapted to form an electrode of the invention could be the named lithium metal oxides and also could also be adapted by those skilled in the art to other types of active materials used for this purpose and such is anticipated (see page 13 lines 5-15).

*Regarding the Claim Rejections under 35 U.S.C. 102*

Claims 1-17 have been rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Publication 2002/0028380 (Tanjo). Applicant respectfully disagrees with this anticipation rejection in light of the amendments to the claims and arguments presented in support of the claims at issue herein.

Regarding claim 1, it has been amended to more clearly describe the particles adapted to form an electrode as clearly described in the specification which discloses a substantially hydrophobic positive battery electrode material formed of individual hydrophobic particles. The material comprises a plurality of active material particles adapted to be formed into an electrode whereby the active particles can be processed into the battery electrode using aqueous solutions. The reason that

an aqueous solution may be employed with applicant's device, is that each individual particle, from the plurality of particles has a substantially hydrophobic coating layer, covering substantially all of their exterior surface area. (See specification and drawings 2 & 3).

Tanjo however, discloses a rechargeable lithium ion battery containing a positive electrode having an active material layer on the surface only of the formed electrode containing a positive electrode active material with a particle diameter of  $5\mu\text{m}$  and a thickness at a range of  $20\mu\text{m}$  to  $80\mu\text{m}$ .

Tanjo's primary purpose, is to suppress electrode expansion during cycling, after the electrode has been formed using conventional techniques which in fact abhor the employment of any solution which might expose the particles to water during the formation of the electrode from the particles.

There is a simple explanation for this clear distinction. Tanjo lacks the hydrophobic coating layer covering substantially all the exterior surface of each individual particles which are used to form the electrode, as claimed by applicant. Consequently, the material forming the Tanjo electrode, lacking the novel construction of applicant's device, cannot be employed in a process that uses a non- aqueous solution to form the electrode itself since the particles would be directly exposed to water during the process. The Examiner's citation to paragraph (40) of Tanjo, as does every other reference in Tanjo, indicates forming the electrode of appropriate active particles and then forming a coating on the top surface of the formed layered electrode, using a non-aqueous solution.

This is because the particles formed into the electrode in Tanjo are of conventional design and not coated on their exterior prior to formation into an electrode, and thereby allow the use of an aqueous solution to form the electrode itself, Tanjo lacks elements claimed by applicant and the resulting function and

utility those elements provide and does not anticipate claim 1 of Applicant's invention.

B. Regarding claim 2, claim 2 is dependent on claim 1. Given the amendment to claim 1, Applicant believes that claim 2 is now in condition for allowance.

C. Regarding claim 3, claim 3 is dependent on claim 2, which is dependent on claim 1. Given the amendment to claim 1, Applicant believes that claim 3 is now in condition for allowance.

D. Regarding claim 4, claim 4 is dependent on claim 1. Given the amendment to claim 1, Applicant believes that claim 4 is now in condition for allowance.

E. Regarding claim 5, claim 5 is dependent on claim 2, which is dependent on claim 1. Given the amendment to claim 1, Applicant believes that claim 5 is now in condition for allowance.

F. Regarding claim 6, claim 6 is dependent on claim 3, which is dependent on claim 1. Given the amendment to claim 1, Applicant believes that claim 6 is now in condition for allowance.

G. Regarding claim 7, claim 7 is dependent on claim 6, which is dependent on claim 1. Given the amendment to claim 1, Applicant believes that claim 7 is now in condition for allowance.

H. Regarding claim 8, claim 8 is dependent on claim 1. Given the amendment to claim 1, Applicant believes that claim 8 is now in condition for allowance.

I. Regarding claim 9, claim 9 is dependent on claim 2, which is dependent on claim 1. Given the amendment to claim 1, Applicant believes that claim 9 is now in condition for allowance.

J. Regarding claim 10, claim 10 is dependent on claim 4, which is dependent on claim 1. Given the amendment to claim 1,

Applicant believes that claim 10 is now in condition for allowance.

K. Regarding claim 11, claim 11 is dependent on claim 5, which is dependent on claim 1. Given the amendment to claim 1, Applicant believes that claim 11 is now in condition for allowance.

L. Regarding claim 12, claim 12 is dependent on claim 6, which is dependent on claim 1. Given the amendment to claim 1, Applicant believes that claim 12 is now in condition for allowance.

M. Regarding claim 17, claim 17 is dependent on claim 12, which is dependent on claim 1. Given the amendment to claim 1, Applicant believes that claim 17 is now in condition for allowance.

N. Regarding claim 26, claim 26 is dependent on claim 1. Given the amendment to claim 1, Applicant believes that claim 26 is now in condition for allowance.

3. Claims 1-17 have been rejected under 35 U.S.C. 102(e) as being anticipated by JP Publication 2002-37364 (Nagura). Applicant respectfully disagrees with this anticipation rejection in light of the amendments to the claims and arguments presented in support of the claims at issue herein.

A. Regarding claim 1, amended claim 1 discloses a substantially hydrophobic positive battery electrode comprising a plurality of lithium-metal particles formed into an electrode, each of said plurality of lithium-metal particles having a substantially hydrophobic coating covering all of their surface area. Nagura discloses a lithium secondary battery with on the electrode's active material with spaced particles of a conducting agent to help prevent the dimensional change of the lithium cells

that results from charge and discharge of the battery, thus improving the battery's charge and discharge capability.

Nagura is similar to the particles forming the electrode as disclosed in Tanjo, in that the individual active material particles disclosed in Nagura do not contain a substantially hydrophobic coating layer which covers substantially the entire surface area of each particle. This is especially depicted in the drawings of Nagura which shows the active material particle (1) which has solid electrolyte (4) and electrical conductors (3) adhered to the surface of the active material (1) with large gaps therebetween and no coating layer of polymer as in applicant's claimed device.

As disclosed in paragraph [0011] of Nagura, only the front face of the particles of the active material of the positive electrode are covered with a lithium ion conductive polymer and then only in the manner shown. There is no need to cover the entire particle because, as stated in paragraph [0011], the purpose of preventing the changing of the cell size is accomplished by only covering a portion of the exposed active material particles of the formed electrode.

Nagura does not expressly or inherently disclose that the exposed exterior surface of all particles formed into an electrode are *fully* with a polymer layer. As such, Nagura only teaches partially covering exposed active material particles and leaving gaps between the individual different particles glued to the active material particle. This follows with the stated purpose of the Nagura invention - not to make an electrode containing only hydrophobic particles, but to control the expansion or contraction of the particles themselves once made by coating the exterior.

Similarly, as noted above, Figure 1 in Nagura, clearly teaches that the active material layer particles are not coated by a layer of a polymer coating, but rather contain gaps where the particles are not coated. These gaps result from the manner of the coating of the particles as discussed in Nagura. Further,

there is no disclosure or teaching in Nagura of eliminating the gaps between different coating elements in Nagura because the purpose of Nagura is to restrict the dimensional change of the formed electrode and not to create a hydrophobic protective layer on each particle to allow formation of the electrode using aqueous solutions. As such, Nagura does not anticipate the creation of a positive battery electrode containing individual active material particles having a layer on the exterior of each particle making them all substantially hydrophobic individually, or formed into an electrode, and which can be so formed using an aqueous solution.

Because Nagura teaches against applicants claimed device which fully covers each active particle with a substantially hydrophobic coating layer, Nagura does not anticipate Applicant's invention. Therefore, as amended, Applicant now believes that claim 1 is in condition for allowance.

B. Regarding claim 2, claim 2 is dependent on claim 1. Given the amendment to claim 1, Applicant believes that claim 2 is now in condition for allowance.

C. Regarding claim 3, claim 3 is dependent on claim 2, which is dependent on claim 1. Given the amendment to claim 1, Applicant believes that claim 3 is now in condition for allowance.

D. Regarding claim 4, claim 4 is dependent on claim 1. Given the amendment to claim 1, Applicant believes that claim 4 is now in condition for allowance.

E. Regarding claim 5, claim 5 is dependent on claim 2, which is dependent on claim 1. Given the amendment to claim 1, Applicant believes that claim 5 is now in condition for allowance.

F. Regarding claim 6, claim 6 is dependent on claim 3, which is dependent on claim 1. Given the amendment to claim 1, Applicant believes that claim 6 is now in condition for allowance.

G. Regarding claim 7, claim 7 is dependent on claim 6, which is dependent on claim 1. Given the amendment to claim 1, Applicant believes that claim 7 is now in condition for allowance.

H. Regarding claim 8, claim 8 is dependent on claim 1. Given the amendment to claim 1, Applicant believes that claim 8 is now in condition for allowance.

I. Regarding claim 9, claim 9 is dependent on claim 2, which is dependent on claim 1. Given the amendment to claim 1, Applicant believes that claim 9 is now in condition for allowance.

J. Regarding claim 10, claim 10 is dependent on claim 4, which is dependent on claim 1. Given the amendment to claim 1, Applicant believes that claim 10 is now in condition for allowance.

K. Regarding claim 11, claim 11 is dependent on claim 5, which is dependent on claim 1. Given the amendment to claim 1, Applicant believes that claim 11 is now in condition for allowance.

L. Regarding claim 12, claim 12 is dependent on claim 6, which is dependent on claim 1. Given the amendment to claim 1, Applicant believes that claim 12 is now in condition for allowance.

*Regarding the Claim Rejections under 35 U.S.C. 103*

Applicant acknowledges the quotation of the appropriate paragraphs of 35 U.S.C. 103 that forms the basis for the rejections under this section made in the office action.



4. Claims 18 and 26 have been rejected under 35 U.S.C. 103(a) as being anticipated by U.S. Publication 2002/0028380 (Tanjo). Applicant respectfully disagrees with this obviousness rejection in light of the amendments to the claims and arguments presented in support of the claims at issue herein.

It has been shown above that Tanjo teaches against applicant's device which has a coating layer covering the entire surface of each active particle. Consequently, any combination with Tanjo is respectfully also traversed.

## Conclusion

All of the objections and rejections raised by the Examiner have been addressed by Applicant. Attorney for Applicant has carefully reviewed the cited references, namely the Tanjo and Nagura publications, and believes that the amended claims presently on file in the subject application are patentably distinguishable with respect to the prior art.

Applicant, as noted in the specification, considers the improvement to be substantial and believes it provides great benefits. However, even if the Examiner does not consider Applicant's claimed device a great advance, it has been established that one should not be deprived of patent protection where it can be shown that a genuine improvement has been made, on comparison with other intentions in the art, even if the improvement lacks the appearance of a *great* advance in the art.

In *re Lange*, 128 USPQ 365, the CCPA on page 367 states that:

*"We think that the present application is a distinct improvement of Jezalik and represents an advance in the art not obvious, having patentable novelty. The art is a crowded and comparatively simple one and in such an art, great advances are not to be expected. However patentability will not be denied to an invention which accomplishes a small, but nevertheless genuine improvement not thought of by others.."*

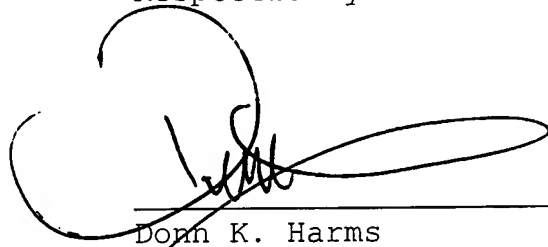
Further, the CCPA in the recent case of *re Meng and Driessen*, 181 USPQ 94, on page 97, reiterated the principal that even though the invention seems a simple advance over prior art, *after the fact*, simplicity, argues *for*, rather than against patentability.

Considering that Applicant's device has elements neither taught or suggested in any one or combination of cited prior art, and, considering that major as well as minor improvements in the art, argue for patentability, the claims of the patent should now be allowable.

As such, Applicant submits that all of the claims of record are in condition for allowance and respectfully requests that a Notice of Allowance be issued in this case in due course.

Should the Examiner have any further questions or concerns the Examiner wishes to address by Examiner's amendment by telephone or otherwise, or should the Examiner have suggestions to more clearly define the subject matter of the claims to more clearly define the patentable subject matter, the Applicant's attorney would be most receptive to such.

Respectfully submitted,



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